

## How Teacher Thinking Shapes Education

by Judy Yero

Many research studies have suggested that the most important factor in student learning in schools is the quality of teaching. Why, then, is so little attention paid to teacher thinking and its relationship to effective teaching? Why do so many books, professional development workshops, and reform efforts focus on what teachers should be doing, rather than on what they are already doing and why?

Studies of "quality teaching" attempt to identify external behaviors that can be transmitted to and adopted by other teachers?more should. As these should filter through individual teacher minds, they are neither understood nor implemented in the same way. Yet, even as individual differences among students receive mounting attention, individual differences among teachers are ignored.

Because teachers' thought processes occur inside their heads, they can't be measured, quantified, or standardized. They don't yield the data with which traditional researchers are accustomed to working. But as Albert Einstein reminds us, "Not everything that can be counted counts, and not everything that counts can be counted." Failure to explore the influence of teacher thinking on the educational process cannot be excused because of its difficulty. Teacher thinking may, in fact, be the most important variable in the educational equation.

Here are just a few of the thinking processes that profoundly influence teacher behavior and student experience.

- Each teacher operates from a set of unexamined beliefs about the nature of teaching and learning, about knowledge, and about the purpose of education itself.
- Teachers base their thinking and behavior on unconscious values -personal, professional, and those of the culture in which they live and were raised. Often, personal values conflict with values of the institution, administrators, and even with a teacher's own values regarding students.
- Teachers unconsciously describe their work in a variety of metaphors?gardening, weaving, coaching, sculpting or filling empty containers. Common educational metaphors conceptualize knowledge as a landscape to be "covered" with the goal of "picking up" concepts?knowledge objects?along the way. Each metaphor unconsciously creates a frame in which some behaviors and perceptions are enabled and others are inhibited.
- There is an assumption of agreement about the meaning of educational buzzwords such as teach, learn, understand, accountability, and success. When educators are forced to actually define those words, agreement often ends with their pronunciation!

It is vital for educational theorists and reformers to acknowledge and address these differences, but it is even more important for teachers themselves to reflect on their own

thinking and behaviors. Because each teacher's processes and interpretations are unique, only they can determine what changes might be needed. Only they can make those changes.

## Teacher Beliefs

Much of what teachers believe about "school" comes from their own experience as students. Through their own school experience, they have formed unconscious beliefs about themselves and their abilities, about the nature of knowledge, and about how knowledge is acquired or "learned." The young child "playing teacher" lines up her dolls in neat rows and stands in front of her "class" admonishing her students to "pay attention." She already has a strong sense of what school is "s'posed to be." Is it any wonder that when she grows up and becomes a teacher, it would not occur to her to teach in any other way? In this way, the "conventional wisdom" of education passes from generation to generation, even when research has demonstrated the flaws in that "wisdom"!

One of the most pervasive beliefs in mainstream education is that knowledge is objective (it exists in some pure form outside the mind) and that the task of education is to transmit the "essential" portions of that knowledge to students. These bits of meat picked from the rich stew of human thought are found in curriculum and standards documents. They have become separated from the thought processes that generated them and from the contexts in which they were shaped. In essence, they are now perceived as "collectibles"?rare antiques that must not be altered in any way lest they become less valuable.

Until educators confront that belief, the wealth of scientific evidence that knowledge is internally-generated and that "transmission" of knowledge objects is ineffective will receive no more than lip-service. Teachers may cognitively accept the research, but it will not significantly affect their practice. Piaget's theory of internally-generated knowledge was received with great enthusiasm by many educators. What they failed to recognize was that the belief underlying the theory was diametrically opposed to the belief that knowledge exists "out there." Attempting to apply Piaget's ideas without also adopting his belief system, teachers would first "give" students the "facts" and then assign a prespecified activity in which the students were supposed to "mess about" with those facts. Where was the student given the opportunity to "internally generate" anything?

When expected changes in test scores did not materialize?tests that were often the same as those used with the old paradigm?many teachers simply decided that the approach "didn't work." Work to do what? How can any theory based on internally-generated knowledge "work" when one unconsciously believes that all knowledge is "out there"?

## How Beliefs Influence Education

Consider the following statements:

- Students must learn the basics of a subject before they can tackle more complex problems.
- The most important concepts are those spelled out in school/district curriculum guide.
- Student ability is more fixed than variable.

Many teachers would nod their heads at this list. Yet, each of the statements is a belief rather than a fact. Each statement is a generalization that may be "true" in some contexts but not in

others. Beliefs such as these are dangerous because they are assumed to be "true" in some absolute sense. As "facts", they act as inflexible guides to behavioral choices. Thus, we see the following behaviors:

- Curriculum guides begin with the "fundamentals" of a subject. "Real problems" can't be discussed until "the basics" have been learned?even though no reason for learning those basics has been established. By the time the basics have been "covered," little time is left to use them on "real problems."
- Concepts listed in curriculum/standards documents become the *raison d'être* of education. Student questions that do not fit neatly into the day's lesson plan are discouraged and students are often chided for "getting off the subject."
- A significant number of teachers have low expectations for students who have done poorly in previous grades or who come from certain racial, ethnic, or demographic groups. Without changing those expectations, raising standards will do little to provide students with equal opportunities. Expectations are internal to the teacher and are generally unaffected by greater demands placed on students.

Lest you think I'm exaggerating, here are some actual quotes from teachers involved in several studies of teacher thinking and behavior. The teachers in the first study[1] were being urged to incorporate current events into their science curriculum. Despite their overwhelming conscious agreement that this was an excellent way to get students interested in the subject, the teacher's responses demonstrated the unconscious beliefs and values that ultimately drove their behavior.

When asked about using the state's coastal erosion problems as a focus for teaching, Chris responded:

*"Naturally, I'd have to go by the state curriculum guide. That would be the first priority. I always teach that first - Its most important to teach the curriculum -'cuz that's what I'm held responsible for and the curriculum identifies what I'm responsible for teaching. At least exposing them to it even if they don't learn it. I have to expose them to it "[author's emphasis]"*

Clearly, Chris believes that education is about what the teacher does rather than about what the student learns. As long as Chris had "exposed" students to what was in the curriculum, he believed he had done his job "even if they don't learn it"! He apparently recognizes that people don't always "catch" what they are "exposed" to.

Molly was even more direct about her reasons for not teaching current events.

*"Well the primary reason I teach anything in my classroom nowadays is because the end of course testing in the state curriculum. First of all, none of these (events) much go into my state curriculum."*

How could they? They hadn't occurred when the state curriculum was written! Often, current events cut across several disciplines. Because curriculum guides divide knowledge into neat boxes, teachers are unaccustomed to teaching "out of the box." In fact, they are often uncomfortable discussing topics outside their own area of expertise - particularly if they believe that teachers must always know the answers.

Ben said he was unlikely to discuss the collision of the Shoemaker-Levy comet with Jupiter - an event that was due to happen in a couple of days.

*"Well - see they teach the solar system in the sixth grade and -and I'm in the seventh grade - so I would have to look into it." When pressed, Ben said that he was unlikely to include such as discussion "because they taught it already? it's not part of the curriculum for the seventh grade - and um it's generally knowledge they should already have"*

How could students "already have" knowledge of something that had not yet occurred? Ben's statement demonstrates his belief that knowledge is something to "have" rather than to "use."

Researchers concluded that participating teachers believed science was a long list of scientifically verified concepts, linked in some rational order and confirmed by some external source. Further, they believed that "teaching" involved transmitting those lists. Many of the teachers in the study were adamant that they would not allow student questions to force the class "off the subject." Because of their strong belief in the primacy of "the curriculum," these teachers were highly unlikely to ever use student questions as a launch pad for inquiry-based teaching. Despite their conscious agreement that incorporating current events was educationally sound, they were equally unlikely to actually do it because of their other beliefs and values.

Another study[2] focused on the thinking of teachers at the beginning of the term. Keep in mind that these statements were made before the teachers met their students for the first time. Their conclusions were based only on cards filled out by each student's former teachers and prior test scores.

*"I sorted the bad kids from the good kids from some of the ones that were just good natured, if they like to work, that type of thing?. I always wanted to have my eye out for the cause of the trouble, and I think that's natural."*

And

*"Kim Wong looks like an excellent student. He made an 89 on that test. And then the background sort of goes with that. His father is a scientist of some sort, and his mother does some kind of computer software. On the other hand, the other extreme is that Sue Gallegos. I think she made a 22 on the test; she was the low end of the score. She's going to be a real problem ."*

These teachers prejudged their students before meeting them based on the perceptions of others and on their own, often unconscious, biases about race, sex, or demographics! Such practices are devastating for students! Once a student has been "ranked," once a student has been labeled "good" or "bad" in the mind of the teacher, the teacher's beliefs and expectations for that student become a self-fulfilling prophecy. The beliefs limit the teacher to perceptions that support their preconceptions.

These are just a few examples of how the pervasive and unexamined beliefs of teachers profoundly influence their behavior and perception. For the sake of students, those thinking processes must not remain hidden.

Metaphors in "Teacher Talk"

- "My classroom is a zoo!"
- "I try to weave all of the concepts together."

- "Those kids are really blossoming."
- "He's one of my top students."
- "We're always falling behind."

Teachers typically use such language when they talk about their work. Each of the sentences contains a metaphor. For the sake of simplicity, I'm using the word metaphor to mean any circumstance where a person uses one conceptual category, experience, or "thing" to describe or define another conceptual category.

Metaphors are much more than "figures of speech"?colorful language to add interest to our ideas. Linguist George Lakoff and philosopher Mark Johnson[3] provide convincing evidence that metaphors may be people's primary mode of mental operation. They argue that because the mind experiences the world through the body in which it resides, people cannot help but conceptualize the world in terms of bodily perceptions. Our concepts of up-down, in-out, front-back, light-dark, and warm-cold are all related to orientations and perceptions acquired through our bodily senses. The "teacher talk" sentences at the beginning of this section contain several such metaphors. A top student represents a vertical orientation, whereas falling behind suggests a horizontal orientation.

Discussing the influence of metaphors on behavior, Lakoff and Johnson state,

"Metaphors may create realities for us, especially social realities. A metaphor may thus be a guide for future action. Such actions will, of course, fit the metaphor. This will, in turn, reinforce the power of the metaphor to make experience coherent. In this sense metaphors can be self-fulfilling prophecies."[4]

Karl enters the teacher's lounge saying, "My classroom is a zoo today." Rather than having to describe a number of particular events that occurred in his classroom, Karl got his point across by saying that it was a zoo. Because people are familiar with zoos, they "get the picture." That picture would have been quite different had Karl said, "My classroom is a beehive." However, it is the way Karl's metaphor focuses his own perceptions that is of greatest importance. When using the zoo metaphor, Karl perceives student activity as negative?uncontrolled. If he employed the beehive metaphor, he might perceive that same activity as productive?students are busy as bees. Thus, Karl's unconscious metaphor directs his perceptions?and his resultant behavior.

John Locke described the mind at birth as a tabula rasa - an empty slate on which all knowledge must be "written" by others. Similar metaphors of teaching reflect the belief that students' minds are empty vessels. "If I'm teaching facts and the things that the ITSB (Iowa Test of Basic Skills) teaches, then I can open her up and pour it in - just open their little heads and pour it in."[5]

Much of the language of education casts students as receptacles for information despite extensive research to the contrary. Possessing the required knowledge objects is seen as proof of learning. Using the objects receives little attention due to a shortage of time. The metaphor Time is a resource (money) drives much of what teachers do and don't do in teaching. Time is something that people can spend or waste, wisely invest in productive activities or squander in questionable pursuits. Thus, time becomes the cost of exploring how a knowledge object might be used.



Unfortunately, time is not a resource that teachers own. The traditional content of a given course or school year allots specific amounts of time to accomplish certain tasks. Teachers must budget this scarce resource, spending only within the limits of what is allotted. Wasting time on material that isn't part of the assigned curriculum means that they will run out before they have "covered" all the material. Heaven forbid that time runs out before the test and the class hasn't "covered" everything! Time is a resource so accepted in Western thinking that most people are unaware that it is a metaphor, one that is not shared by some other cultures.[6]

"It is what teachers think, what teachers believe, and what teachers do at the level of the classroom that ultimately shapes the kind of learning that young people get. Andy Hargreaves and Michael Fullan.[7]

Carl Jung once said, "Children are educated by what the grown-up is and not by his talk." If teachers don't know who they are?if they are unaware of their beliefs, values, and metaphors about learning, teaching, and the nature of knowledge itself?then they are also unaware of what they are teaching by reason of those unconscious processes. In *The Predictable Failure of Educational Reform*, Seymour Sarason suggests that internal, unconscious values and beliefs about teaching and learning are at the heart of the failure of reform efforts.

"The problem is not technical. Nor is it motivational. Nor is it moral. The problem inheres in your unreflective acceptance of assumptions and axioms that seem so obviously right, natural, and proper that to question them is to question your reality. Therefore, faced with failure after failure, having tried this, that, and almost everything else, you don't examine your bedrock assumptions. Instead, you come up with variations on past themes?now with more desperation and anger, but less hope."[8]

As we work to bring about meaningful change in education, let us enlarge our focus beyond the externals --books, the curriculum, teaching methodologies, assessment. Only by including the internal processes through which those externals are filtered will we gain a more complete perspective -- one that holds great promise as we seek out new horizons for learning.

## Notes

[1] Yerrick, R., Parke, H., and Nugent, J. (1997) *Struggling to Promote Deeply Rooted Change: The Filtering Effect of Teachers' Beliefs on Understanding Transformational View of Teaching Science*, *Science Education*, Vol. 81, 137-159.

[2] Berliner, D. C. (1987). *Ways of Thinking About Students and Classrooms by More or Less Experienced Teachers*. In J. Calderhead (Ed.). *Exploring Teachers' Thinking* (pp. 60-84). London: Cassell Educational Limited.

[3] Lakoff, G. & Johnson, M. (1980) *Metaphors We Live By*. Chicago: University of Chicago Press. 56-60. See also Lakoff, G. & Johnson, M. (1999) *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*. New York: Basic Books.

[4] Lakoff and Johnson (1980). *Metaphors?* 156.

[5] Noble, A. J. & Smith, M. L. (1994). *Old and New Beliefs about Measurement-Driven Reform: "The More Things Change, the More They Stay the Same."* National Center for Research on Evaluation, Standards, and Student Testing, Los Angeles, CA. (ERIC Document Reproduction Service No. ED 378 228)

[6] Lakoff, G. & Johnson, M. (1999) *Philosophy in the Flesh?* p 165.

[7] Hargreaves, A. & Fullan, M. G. (1992). *Understanding Teacher Development*. New York: Teachers College Press, XI

[8] Sarason, S. B. (1991). *The Predictable Failure of Educational Reform*. San Francisco: Jossey-Bass. 148

Additional articles on teacher thinking and its influence on education may be found at <http://www.teachersmind.com>.

### **About the Author**

Judith Lloyd Yero is Director of Teacher's Mind Resources and is the author of *Teaching In Mind: How Teacher Thinking Shapes Education* (MindFlight Publishing, 2002). She combines a strong background in physical and cognitive sciences with experience in middle school, high school, and college teaching, as well as extensive training in psychology. For a number of years, Yero presented national workshops on the myriad ways in which students think and learn. During those workshops, she recognized that teachers were eager to learn more about their own thinking processes. Her workshops now focus on helping teachers mindfully transform the educational process. Yero may be reached at [eagle@mind-flight.com](mailto:eagle@mind-flight.com) or at <http://www.teachersmind.com>.

The material in this article was adapted from  
*Teaching In Mind: How Teacher Thinking Shapes Education* by Judith Lloyd Yero.

More information on the book is available at <http://www.mind-flight.com>.

## How Teacher Thinking Shapes Education

by Judy Yero

Many research studies have suggested that the most important factor in student learning in schools is the quality of teaching. Why, then, is so little attention paid to teacher thinking and its relationship to effective teaching? Why do so many books, professional development workshops, and reform efforts focus on what teachers should be doing, rather than on what they are already doing and why?

Studies of "quality teaching" attempt to identify external behaviors that can be transmitted to and adopted by other teachers?more should. As these should filter through individual teacher minds, they are neither understood nor implemented in the same way. Yet, even as individual differences among students receive mounting attention, individual differences among teachers are ignored.

Because teachers' thought processes occur inside their heads, they can't be measured, quantified, or standardized. They don't yield the data with which traditional researchers are accustomed to working. But as Albert Einstein reminds us, "Not everything that can be counted counts, and not everything that counts can be counted." Failure to explore the influence of teacher thinking on the educational process cannot be excused because of its difficulty. Teacher thinking may, in fact, be the most important variable in the educational equation.

Here are just a few of the thinking processes that profoundly influence teacher behavior and student experience.

- Each teacher operates from a set of unexamined beliefs about the nature of teaching and learning, about knowledge, and about the purpose of education itself.
- Teachers base their thinking and behavior on unconscious values -personal, professional, and those of the culture in which they live and were raised. Often, personal values conflict with values of the institution, administrators, and even with a teacher's own values regarding students.
- Teachers unconsciously describe their work in a variety of metaphors?gardening, weaving, coaching, sculpting or filling empty containers. Common educational metaphors conceptualize knowledge as a landscape to be "covered" with the goal of "picking up" concepts?knowledge objects?along the way. Each metaphor unconsciously creates a frame in which some behaviors and perceptions are enabled and others are inhibited.
- There is an assumption of agreement about the meaning of educational buzzwords such as teach, learn, understand, accountability, and success. When educators are forced to actually define those words, agreement often ends with their pronunciation!

It is vital for educational theorists and reformers to acknowledge and address these differences, but it is even more important for teachers themselves to reflect on their own



thinking and behaviors. Because each teacher's processes and interpretations are unique, only they can determine what changes might be needed. Only they can make those changes.

### Teacher Beliefs

Much of what teachers believe about "school" comes from their own experience as students. Through their own school experience, they have formed unconscious beliefs about themselves and their abilities, about the nature of knowledge, and about how knowledge is acquired or "learned." The young child "playing teacher" lines up her dolls in neat rows and stands in front of her "class" admonishing her students to "pay attention." She already has a strong sense of what school is "s'posed to be." Is it any wonder that when she grows up and becomes a teacher, it would not occur to her to teach in any other way? In this way, the "conventional wisdom" of education passes from generation to generation, even when research has demonstrated the flaws in that "wisdom"!

One of the most pervasive beliefs in mainstream education is that knowledge is objective (it exists in some pure form outside the mind) and that the task of education is to transmit the "essential" portions of that knowledge to students. These bits of meat picked from the rich stew of human thought are found in curriculum and standards documents. They have become separated from the thought processes that generated them and from the contexts in which they were shaped. In essence, they are now perceived as "collectibles"?rare antiques that must not be altered in any way lest they become less valuable.

Until educators confront that belief, the wealth of scientific evidence that knowledge is internally-generated and that "transmission" of knowledge objects is ineffective will receive no more than lip-service. Teachers may cognitively accept the research, but it will not significantly affect their practice. Piaget's theory of internally-generated knowledge was received with great enthusiasm by many educators. What they failed to recognize was that the belief underlying the theory was diametrically opposed to the belief that knowledge exists "out there." Attempting to apply Piaget's ideas without also adopting his belief system, teachers would first "give" students the "facts" and then assign a prespecified activity in which the students were supposed to "mess about" with those facts. Where was the student given the opportunity to "internally generate" anything?

When expected changes in test scores did not materialize?tests that were often the same as those used with the old paradigm?many teachers simply decided that the approach "didn't work." Work to do what? How can any theory based on internally-generated knowledge "work" when one unconsciously believes that all knowledge is "out there"?

### How Beliefs Influence Education

Consider the following statements:

- Students must learn the basics of a subject before they can tackle more complex problems.
- The most important concepts are those spelled out in school/district curriculum guide.
- Student ability is more fixed than variable.

Many teachers would nod their heads at this list. Yet, each of the statements is a belief rather than a fact. Each statement is a generalization that may be "true" in some contexts but not in

others. Beliefs such as these are dangerous because they are assumed to be "true" in some absolute sense. As "facts", they act as inflexible guides to behavioral choices. Thus, we see the following behaviors:

- Curriculum guides begin with the "fundamentals" of a subject. "Real problems" can't be discussed until "the basics" have been learned?even though no reason for learning those basics has been established. By the time the basics have been "covered," little time is left to use them on "real problems."
- Concepts listed in curriculum/standards documents become the *raison d'etre* of education. Student questions that do not fit neatly into the day's lesson plan are discouraged and students are often chided for "getting off the subject."
- A significant number of teachers have low expectations for students who have done poorly in previous grades or who come from certain racial, ethnic, or demographic groups. Without changing those expectations, raising standards will do little to provide students with equal opportunities. Expectations are internal to the teacher and are generally unaffected by greater demands placed on students.

Lest you think I'm exaggerating, here are some actual quotes from teachers involved in several studies of teacher thinking and behavior. The teachers in the first study[1] were being urged to incorporate current events into their science curriculum. Despite their overwhelming conscious agreement that this was an excellent way to get students interested in the subject, the teacher's responses demonstrated the unconscious beliefs and values that ultimately drove their behavior.

When asked about using the state's coastal erosion problems as a focus for teaching, Chris responded:

*"Naturally, I'd have to go by the state curriculum guide. That would be the first priority. I always teach that first - Its most important to teach the curriculum -'cuz that's what I'm held responsible for and the curriculum identifies what I'm responsible for teaching. At least exposing them to it even if they don't learn it. I have to expose them to it "[author's emphasis]*

Clearly, Chris believes that education is about what the teacher does rather than about what the student learns. As long as Chris had "exposed" students to what was in the curriculum, he believed he had done his job "even if they don't learn it"! He apparently recognizes that people don't always "catch" what they are "exposed" to.

Molly was even more direct about her reasons for not teaching current events.

*"Well the primary reason I teach anything in my classroom nowadays is because the end of course testing in the state curriculum. First of all, none of these (events) much go into my state curriculum."*

How could they? They hadn't occurred when the state curriculum was written! Often, current events cut across several disciplines. Because curriculum guides divide knowledge into neat boxes, teachers are unaccustomed to teaching "out of the box." In fact, they are often uncomfortable discussing topics outside their own area of expertise - particularly if they believe that teachers must always know the answers.

Ben said he was unlikely to discuss the collision of the Shoemaker-Levy comet with Jupiter - an event that was due to happen in a couple of days.

*"Well - see they teach the solar system in the sixth grade and -and I'm in the seventh grade - so I would have to look into it." When pressed, Ben said that he was unlikely to include such as discussion "because they taught it already? it's not part of the curriculum for the seventh grade - and um it's generally knowledge they should already have"*

How could students "already have" knowledge of something that had not yet occurred? Ben's statement demonstrates his belief that knowledge is something to "have" rather than to "use."

Researchers concluded that participating teachers believed science was a long list of scientifically verified concepts, linked in some rational order and confirmed by some external source. Further, they believed that "teaching" involved transmitting those lists. Many of the teachers in the study were adamant that they would not allow student questions to force the class "off the subject." Because of their strong belief in the primacy of "the curriculum," these teachers were highly unlikely to ever use student questions as a launch pad for inquiry-based teaching. Despite their conscious agreement that incorporating current events was educationally sound, they were equally unlikely to actually do it because of their other beliefs and values.

Another study[2] focused on the thinking of teachers at the beginning of the term. Keep in mind that these statements were made before the teachers met their students for the first time. Their conclusions were based only on cards filled out by each student's former teachers and prior test scores.

*"I sorted the bad kids from the good kids from some of the ones that were just good natured, if they like to work, that type of thing?. I always wanted to have my eye out for the cause of the trouble, and I think that's natural."*

And

*"Kim Wong looks like an excellent student. He made an 89 on that test. And then the background sort of goes with that. His father is a scientist of some sort, and his mother does some kind of computer software. On the other hand, the other extreme is that Sue Gallegos. I think she made a 22 on the test; she was the low end of the score. She's going to be a real problem."*

These teachers prejudged their students before meeting them based on the perceptions of others and on their own, often unconscious, biases about race, sex, or demographics! Such practices are devastating for students! Once a student has been "ranked," once a student has been labeled "good" or "bad" in the mind of the teacher, the teacher's beliefs and expectations for that student become a self-fulfilling prophecy. The beliefs limit the teacher to perceptions that support their preconceptions.

These are just a few examples of how the pervasive and unexamined beliefs of teachers profoundly influence their behavior and perception. For the sake of students, those thinking processes must not remain hidden.

Metaphors in "Teacher Talk"

- "My classroom is a zoo!"
- "I try to weave all of the concepts together."

- "Those kids are really blossoming."
- "He's one of my top students."
- "We're always falling behind."

Teachers typically use such language when they talk about their work. Each of the sentences contains a metaphor. For the sake of simplicity, I'm using the word metaphor to mean any circumstance where a person uses one conceptual category, experience, or "thing" to describe or define another conceptual category.

Metaphors are much more than "figures of speech"?colorful language to add interest to our ideas. Linguist George Lakoff and philosopher Mark Johnson[3] provide convincing evidence that metaphors may be people's primary mode of mental operation. They argue that because the mind experiences the world through the body in which it resides, people cannot help but conceptualize the world in terms of bodily perceptions. Our concepts of up-down, in-out, front-back, light-dark, and warm-cold are all related to orientations and perceptions acquired through our bodily senses. The "teacher talk" sentences at the beginning of this section contain several such metaphors. A top student represents a vertical orientation, whereas falling behind suggests a horizontal orientation.

Discussing the influence of metaphors on behavior, Lakoff and Johnson state,

"Metaphors may create realities for us, especially social realities. A metaphor may thus be a guide for future action. Such actions will, of course, fit the metaphor. This will, in turn, reinforce the power of the metaphor to make experience coherent. In this sense metaphors can be self-fulfilling prophecies."[4]

Karl enters the teacher's lounge saying, "My classroom is a zoo today." Rather than having to describe a number of particular events that occurred in his classroom, Karl got his point across by saying that it was a zoo. Because people are familiar with zoos, they "get the picture." That picture would have been quite different had Karl said, "My classroom is a beehive." However, it is the way Karl's metaphor focuses his own perceptions that is of greatest importance. When using the zoo metaphor, Karl perceives student activity as negative?uncontrolled. If he employed the beehive metaphor, he might perceive that same activity as productive?students are busy as bees. Thus, Karl's unconscious metaphor directs his perceptions?and his resultant behavior.

John Locke described the mind at birth as a tabula rasa - an empty slate on which all knowledge must be "written" by others. Similar metaphors of teaching reflect the belief that students' minds are empty vessels. "If I'm teaching facts and the things that the ITSB (Iowa Test of Basic Skills) teaches, then I can open her up and pour it in - just open their little heads and pour it in."[5]

Much of the language of education casts students as receptacles for information despite extensive research to the contrary. Possessing the required knowledge objects is seen as proof of learning. Using the objects receives little attention due to a shortage of time. The metaphor Time is a resource (money) drives much of what teachers do and don't do in teaching. Time is something that people can spend or waste, wisely invest in productive activities or squander in questionable pursuits. Thus, time becomes the cost of exploring how a knowledge object might be used.

Unfortunately, time is not a resource that teachers own. The traditional content of a given course or school year allots specific amounts of time to accomplish certain tasks. Teachers must budget this scarce resource, spending only within the limits of what is allotted. Wasting time on material that isn't part of the assigned curriculum means that they will run out before they have "covered" all the material. Heaven forbid that time runs out before the test and the class hasn't "covered" everything! Time is a resource is so accepted in Western thinking that most people are unaware that it is a metaphor, one that is not shared by some other cultures.[6]

"It is what teachers think, what teachers believe, and what teachers do at the level of the classroom that ultimately shapes the kind of learning that young people get. Andy Hargreaves and Michael Fullan.[7]

Carl Jung once said, "Children are educated by what the grown-up is and not by his talk." If teachers don't know who they are?if they are unaware of their beliefs, values, and metaphors about learning, teaching, and the nature of knowledge itself?then they are also unaware of what they are teaching by reason of those unconscious processes. In *The Predictable Failure of Educational Reform*, Seymour Sarason suggests that internal, unconscious values and beliefs about teaching and learning are at the heart of the failure of reform efforts.

"The problem is not technical. Nor is it motivational. Nor is it moral. The problem inheres in your unreflective acceptance of assumptions and axioms that seem so obviously right, natural, and proper that to question them is to question your reality. Therefore, faced with failure after failure, having tried this, that, and almost everything else, you don't examine your bedrock assumptions. Instead, you come up with variations on past themes?now with more desperation and anger, but less hope."[8]

As we work to bring about meaningful change in education, let us enlarge our focus beyond the externals --books, the curriculum, teaching methodologies, assessment. Only by including the internal processes through which those externals are filtered will we gain a more complete perspective -- one that holds great promise as we seek out new horizons for learning.

## Notes

[1] Yerrick, R., Parke, H., and Nugent, J. (1997) Struggling to Promote Deeply Rooted Change: The Filtering Effect of Teachers' Beliefs on Understanding Transformational View of Teaching Science, *Science Education*, Vol. 81, 137-159.

[2] Berliner, D. C. (1987). Ways of Thinking About Students and Classrooms by More or Less Experienced Teachers. In J. Calderhead (Ed.). *Exploring Teachers' Thinking* (pp. 60-84). London: Cassell Educational Limited.

[3] Lakoff, G. & Johnson, M. (1980) *Metaphors We Live By*. Chicago: University of Chicago Press. 56-60. See also Lakoff, G. & Johnson, M. (1999) *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*. New York: Basic Books.

[4] Lakoff and Johnson (1980). *Metaphors?* 156.

[5] Noble, A. J. & Smith, M. L. (1994). Old and New Beliefs about Measurement-Driven Reform: "The More Things Change, the More They Stay the Same." National Center for Research on Evaluation, Standards, and Student Testing, Los Angeles, CA. (ERIC Document Reproduction Service No. ED 378 228)



[6] Lakoff, G. & Johnson, M. (1999) *Philosophy in the Flesh?* p 165.

[7] Hargreaves, A. & Fullan, M. G. (1992). *Understanding Teacher Development*. New York: Teachers College Press, XI

[8] Sarason, S. B. (1991). *The Predictable Failure of Educational Reform*. San Francisco: Jossey-Bass. 148

Additional articles on teacher thinking and its influence on education may be found at <http://www.teachersmind.com>.

### **About the Author**

Judith Lloyd Yero is Director of Teacher's Mind Resources and is the author of *Teaching In Mind: How Teacher Thinking Shapes Education* (MindFlight Publishing, 2002). She combines a strong background in physical and cognitive sciences with experience in middle school, high school, and college teaching, as well as extensive training in psychology. For a number of years, Yero presented national workshops on the myriad ways in which students think and learn. During those workshops, she recognized that teachers were eager to learn more about their own thinking processes. Her workshops now focus on helping teachers mindfully transform the educational process. Yero may be reached at [eagle@mind-flight.com](mailto:eagle@mind-flight.com) or at <http://www.teachersmind.com>.

The material in this article was adapted from  
*Teaching In Mind: How Teacher Thinking Shapes Education* by Judith Lloyd Yero.

More information on the book is available at <http://www.mind-flight.com>.